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The legal framework for groundwater allocation in Quebec: towards integrated water management

Tremblay, Hugo

Published in:
Law, Environment and Development Journal

Publication date:
2008

[Link to publication in Discovery Research Portal](#)

Citation for published version (APA):

Tremblay, H. (2008). The legal framework for groundwater allocation in Quebec: towards integrated water management. *Law, Environment and Development Journal*, 4(2), 102-118. <http://www.lead-journal.org/2008-2.htm>

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THE LEGAL FRAMEWORK FOR GROUNDWATER ALLOCATION IN QUEBEC:
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Hugo Tremblay

ARTICLE



VOLUME
4/2

LEAD Journal (Law, Environment and Development Journal)
is a peer-reviewed academic publication based in New Delhi and London and jointly managed by the
School of Law, School of Oriental and African Studies (SOAS) - University of London
and the International Environmental Law Research Centre (IELRC).

LEAD is published at www.lead-journal.org

ISSN 1746-5893

*The Managing Editor, LEAD Journal, c/o International Environmental Law Research Centre (IELRC), International Environment
House II, 1F, 7 Chemin de Balexert, 1219 Châtelaine-Geneva, Switzerland, Tel/fax: + 41 (0)22 79 72 623, info@lead-journal.org*

ARTICLE

THE LEGAL FRAMEWORK FOR GROUNDWATER ALLOCATION IN QUEBEC: TOWARDS INTEGRATED WATER MANAGEMENT*

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This document can be cited as
Hugo Tremblay, 'The Legal Framework for Groundwater Allocation
in Quebec: Towards Integrated Water Management',
4/2 *Law, Environment and Development Journal* (2008), p. 102,
available at <http://www.lead-journal.org/content/08102.pdf>

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* NOTE: This text is adapted from a master's thesis completed under the supervision of Prof. Sophie Lavallée. The original work is part of a larger multidisciplinary research project funded by the Government of Quebec and directed by Prof. Manuel Rodriguez-Pinzon from the Centre for Research in Regional Planning and Development at Université Laval, Quebec City. The larger project involved scientific studies on: 1) the impacts of land use and agricultural activities on groundwater quality; 2) the optimisation of planning methods and catchment area delineation to protect groundwater quality; 3) the quantitative analysis of local constraints related to the implementation of the Groundwater Catchment Regulation. Within this context, the purpose of the thesis was twofold: 1) to provide a model of the legal framework pertaining to groundwater allocation; 2) to identify potential deficiencies in the legal framework and suggest possible improvements.

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INTRODUCTION

Recently, awareness of groundwater protection has increased substantially in the province of Quebec, Canada. Further to contamination episodes in neighbouring provinces which raised the profile of groundwater related issues, the Groundwater Catchment Regulation (hereafter GWCR) was promulgated in 2002 to protect water quality in public and private wells.¹ However, the GWCR faces significant implementation problems: at least 40 per cent of Quebec municipalities, which are the main water services providers, reported that they would be unable to comply with the Regulation by 2008.² Implementation of the GWCR is not the only sensitive issue from a juridical standpoint, as the legal framework for groundwater management is fragmented and lacks coherence. A summary review of provincial legislation reveals that more than 30 laws and regulations have a direct impact on groundwater management. Moreover, many governmental agencies are involved in the application and enforcement of the relevant legal framework. In general, both the scattering of the rules of law and the multiplication of competing responsibilities within the Administration reduce the legal framework's accessibility and the effectiveness of its implementation.³

In light of the apparent shortcomings and implementation difficulties of the applicable legal framework, the purpose of this paper is to provide a clear model of the law pertaining to groundwater apportionment in Quebec as well as suggestions to improve its efficiency. This study focuses on the legal aspects of groundwater quantity management related to conflicts resulting from competition between users for the appropriation of the resource. It does not consider the legal framework regarding groundwater quality management, namely the rules

of law related to restrictions on land use to protect groundwater from contamination.

The study of the legal framework for groundwater allocation raises the following questions: 1) what legal conditions must be met to use groundwater? 2) What legal mechanisms determine the volumes of groundwater used? 3) What is the legal framework for managing conflicts between competing groundwater uses? 4) How can the legal framework pertaining to groundwater quantity management become more efficient? To answer these questions in turn, this paper is divided into four sections:

- 1) The allocation of groundwater through property rights: in this section, it is argued that property rights, which are traditionally construed as relevant to groundwater quantity management, do not provide a framework for allocating the resource because groundwater is a *res communis*. However, land ownership is the incipient condition for groundwater utilisation as a right to use unspecified volumes of groundwater is tied to real-estate property;
- 2) The allocation of groundwater through statutory law: the focus of this section is the GWCR, which subjects groundwater extraction to governmental authorisations. The scope and operation of this regime is examined in order to clarify the legal constraints that determine the volumes of groundwater used. Also considered is a second authorisation regime which prioritises agricultural uses over other groundwater uses in rural areas;
- 3) The allocation of groundwater through judicial means in case of conflict: this section details legal remedies to obtain and to prevent or deny the use of groundwater resources;
- 4) The assessment of the legal framework for groundwater quantity management: in this section, the Integrated Water Resources Management paradigm is used to identify potential shortcomings of the legal framework pertaining to groundwater quantity management and to suggest specific improvements.

As this study illustrates, Quebec water law is still maturing. Quebec is water rich and overabundance

1 R.Q., c.Q-2, r.1.3. Provincial laws and regulations are available at <http://www.publicationsduquebec.gouv.qc.ca/accueil.en.html>.

2 Bruno Sylvestre, *Portrait of Municipal Groundwater Catchment Protection in Small Quebec Municipalities* (Québec: Université Laval, thèse de maîtrise, 2006).

3 Dante Caponera, *National and International Water Law and Administration* 138, 144 (The Hague: Kluwer Law International, 2003).

(flooding, for example) rather than scarcity has traditionally been the prevailing cause of conflict related to water resources. As a result, certain aspects of the legal framework for water management have remained comparatively underdeveloped up to recent years for lack of necessity. However, the constant increase in anthropogenic uses compounded by pollution and expected modifications in hydrological patterns due to climate change might lead to localised shortages that require a more sophisticated legal framework. This raises issues that have either been addressed or are presently considered in other jurisdictions. For example, reflections on the interplay between ownership of water, governmental authorisations and the role of the State as public trustee in South-Africa can be used to explore the ramifications of current developments detailed in this study with respect to groundwater allocation in Quebec.⁴ Despite differences in hydrological regimes or levels of development, such comparative perspectives might provide valuable insights in the strengthening of national frameworks for water quantity management.

1

GROUNDWATER ALLOCATION THROUGH PROPERTY RIGHTS

Property is generally about the allocation of resources and governing their use. Property places the control of a scarce and valuable resource in the hand of the owner.⁵ Hence, in as much as it applies to groundwater, property has a direct influence on its apportionment. However, property can be legally formalised under different guises, each with a specific

effect on resources allocation. Four archetypes of property ownership are potentially relevant to groundwater allocation in Quebec:

- Private property: in this situation, property rights belong to an individual or a company. Private property rights are exclusive and may be transferred to other users. Non-owners do not have access to the resource;
- Common property: in this situation, the resource is owned by a community of users excluding non-members. In general, the rights linked to common property are non-exclusive within the community and provide equal access to joint owners;
- Public property: in this situation, ownership is vested in the State, which defines, manages and enforces the rights to use the resource. In general, authorisations to use the resource are not transferable on a consensual basis between users;
- Open access: in this situation, property rights are poorly defined or even non-existent and therefore unable to legally apportion resources between different users.⁶

This section considers in turn the four archetypes of property ownership to establish if and how they apply to groundwater in Quebec. As a result of this process, it will be possible to determine the impact of property as a mechanism for the allocation of groundwater at the provincial level.

1.1 Private Property

According to traditional case law and doctrine, groundwater is the private property of landowners

⁴ See G.J. Pienaar and E. van der Schyff, 'The Reform of Water Rights in South Africa', 3/2 *Law, Environment and Development Journal* 179 (2007), available at <http://www.lead-journal.org/content/07179.pdf>.

⁵ David Lametti, 'The Concept of Property: Relations Through Objects of Social Wealth', 53 *U. Toronto L.J.* 325, 334-335 (2003).

⁶ This is a summarised translation of the typology presented in Max Falque, 'Des droits de propriété sur l'eau, pourquoi pas?', in Max Falque and Michel Massenet eds, *Droits de propriété, économie et environnement – Les ressources en eau* 1, 6 (Paris: Dalloz, 2000).

in Quebec.⁷ At present, the traditional legal status of groundwater should be unaltered despite recent calls by jurists and governmental commitments to modify the characterisation of groundwater as an object of private property because the legal framework pertaining to the resource remains unchanged.⁸

Contrary to the prevalent opinion, this sub-section argues that groundwater cannot be subject to private property. This argument is based on the following points: 1) in Quebec civil law, groundwater cannot be considered a *res nullius* or a

movable good.⁹ Such characterisations imply potential possession.¹⁰ However, the potential possession of water is impossible as long as it is underground in a natural state.¹¹ Hence, the characterisation of the resource as a *res nullius* or a movable good suggests an absence of legal status for groundwater. In such a case, private property could not be construed as an allocation mechanism for groundwater. 2) To be subject to private property, groundwater must be an immovable good.¹² However, none of the legal requisites for actual possession of an immovable can be met with respect to groundwater given its fluid nature and underground migration.¹³ 3) None of the legal

7 With respect to case law: *Gilbert v Carrière Hébert*, Provincial Court of Quebec, Judgement of 18 December 1979, JE 80-145, *Simoneau v Berthiaume*, Court of Appeal of Quebec, Judgement of 13 July 1998, 1998 RDI 373 [hereafter *Simoneau v Berthiaume*], *Jean v Ferland*, Superior Court of Quebec, Judgement of 31 August 2000, 2000 RDI 605, and *Dufour v Grégoire*, Court of Quebec, Judgement of 7 April 2004, BE 2004BE-518 [hereafter *Dufour v Grégoire*]. With respect to doctrine: Commission d'étude des problèmes juridiques de l'eau, *Rapport de la Commission d'étude des problèmes juridiques de l'eau* 304 (Québec: Gouvernement du Québec, 1975) [hereafter Commission d'étude des problèmes juridiques de l'eau], Guy Lord et al., *Le droit québécois de l'eau* 119-122 (Québec: Ministère des Ressources naturelles, Vol.1, 1977), René Dussault and Louis Borgeat, *Traité de droit administratif* 117 (Quebec City: Presses de l'Université Laval, Vol.2, 2nd ed. 1986), Patrick Cossette, 'Les eaux souterraines au Québec', 6 *Bulletins de Droit Municipal* 132, 141 (1999), and Denys-Claude Lamontagne, *Biens et propriété* 184 (Cowansville: Éditions Yvon Blais, 5th ed. 2005) [hereafter Lamontagne].

8 Ministère de l'Environnement, *L'eau. La vie. L'avenir. La politique nationale de l'eau* 15-17 (Québec: Gouvernement du Québec, 2002) [hereafter Quebec Water Policy], Madeleine Cantin Cumyn, Michelle Cumyn and Claire Skrinda, 'L'eau, chose commune: un statut juridique à confirmer', 79 *Revue du barreau canadien* 398, 410 (2000) [hereafter Cantin Cumyn], and François Frenette, 'Bilan de la réforme du droit des biens', 105 *Revue du Notariat* 309, 330-331 (2003). Section 1 of Bill 92, which was introduced to the provincial legislative body on 5 June 2008 as An Act to Affirm the Collective Nature of Water Resources and Provide for Increased Water Resource Protection [hereafter Bill 92], provides that 'both surface water and groundwater, in their natural state, are resources that are part of the common heritage of the Quebec nation and may not be appropriated except under the conditions defined by law, including the Civil Code' (emphasis added).

9 Sections 899 to 907 of the *Civil Code of Quebec*, S.Q., 1991, c.57 [hereafter CCQ], provide the bases for the classification of goods in Quebec civil law. Property is divided into movable and immovable. Land, and any constructions and works of a permanent nature located thereon and anything forming an integral part thereof, are immovable. All other property, if not qualified by law, is movable. When movable are incorporated with, form an integral part of, or are physically attached or joined to immovable, they are considered immovable. For example, plants and minerals, as long as they are not separated or extracted from the land, are immovable. According to Sections 914 and 935 CCQ, a *res nullius* is good without an owner that can become appropriated through occupation.

10 Sections 921 and 930 CCQ.

11 According to Olivier Banton, 'Le capital eau : son potentiel et ses usages - Les eaux souterraines', in Jean-Pierre Villeneuve, Alain Rousseau and Sophie Duchesne eds, *Symposium sur la gestion de l'eau au Québec - Actes du Symposium - L'Etat de l'eau au Québec* 45, 47 (Sainte-Foy: INRS-Eau, Vol.2, 1998), groundwater in Quebec remains on average thirteen years underground before it naturally flows into surface waters.

12 This corresponds to the traditional approach, which is based on section 951 CCQ and reinforced by sections 899 to 907 CCQ. Section 951 CCQ states that ownership of the soil carries with it ownership of what is below the surface. Paragraph two of section 900 CCQ provides the only possible exception to the characterisation of groundwater as an immovable. However, a case law review shows only one occurrence of the application of this paragraph to groundwater, see *Simoneau v Berthiaume*, note 7 above. This exception is not discussed given its irrelevance to the natural flow of groundwater which occurs without the real-estate owner's intervention.

13 Aquifer characteristics as well as groundwater flow patterns remain largely unknown in Quebec. However, possession must be continuous, public and unequivocal according to section 922 CCQ.

mechanisms for appropriation or termination of private ownership can be coherently applied to groundwater's movements in and out of an estate.¹⁴ To do so, the legal framework related to private property would have to take into account the amount of water initially underground when the title is acquired plus the subsequent recharge from rainfall and adjacent estates, a function which is incapable to perform because none of the legal mechanisms for appropriation or termination of ownership is precise enough to manage specific groundwater quantities. 4) If groundwater is subject to private property, the hydrological reality and natural underground migration of water threaten defining legal characteristics of property, namely exclusivity and perpetuity.¹⁵ 5) The exclusive nature of private property is a legal fiction that tends to negate interactions between the object owned and its surroundings.¹⁶ This discrepancy between legal fiction and hydrologic reality can provoke conflicts between adjacent owners. These conflicts are usually managed through attenuation mechanisms such as the rule of tolerance for normal neighbourhood annoyances.¹⁷ However, the zero-sum interactions between groundwater users create situations in which attenuation mechanisms become useless and are unable to manage or prevent conflict. For example, the drilling and operation of a new well for domestic purposes might dry up a pre-existing neighbouring well also used for domestic purposes. In this case, the annoyance can be both normal

because related to vital needs, and beyond the limit of tolerance because it prevents the fulfilment of neighbouring vital needs if groundwater is the only available source of water. Hence, the application of private property to groundwater reduces the effectiveness of the societal role of law as a structure for dispute resolution.

Given the above, the coherent application of private property rights to groundwater is impossible in Quebec law. The imposition of private property on hydrogeology creates inconsistencies and contradictions within the civil law framework. As a result, private ownership is useless and/or irrelevant as a legal tool to allocate groundwater.

1.2 Common Property

In Quebec civil law, undivided co-ownership is the only legal artefact that could potentially be construed as common property with respect to groundwater allocation.¹⁸ However, the application of this type of private ownership to groundwater would face significant problems: 1) in principle, undivided co-ownership is not permanent and partition may be demanded at any time.¹⁹ This implies the legal partition of the object owned. Such a process is impossible to perform with respect to groundwater.²⁰ 2) Apart from a presumption of equal use, undivided co-ownership suggests no means to apportion property usage between owners.²¹ The presumption of equal use does not constitute a realistic management principle that takes into account the vast difference in volumes utilised for agriculture, industry or domestic purposes. 3) Geological complexity as well as interrelations

14 See sections 916, 953 and 989 CCQ, Lamontagne, note 7 above at 154-166, and Pierre-Claude Lafond, *Précis de droit des biens* 275-277, 987-988 (Montréal: Éditions Thémis, 1999).

15 In principle, property rights exist as long as the objects to which they are attached: Sylvio Normand, 'La notion de modalité de la propriété', in Sylvio Normand ed., *Mélanges offerts au professeur François Frenette: Étude portant sur le droit patrimonial* 255, 258 (Québec: Presses de l'Université Laval, 2006). The abandonment of a good must be explicit: Sylvio Normand, *Introduction au droit des biens* 38 (Montréal: Wilson and Lafleur, 2000). Lamontagne, note 7 above at 154-157, details the defining characteristics of property rights in Quebec.

16 According to section 947 CCQ, ownership is the right to use, enjoy and dispose of property fully and freely.

17 The freedom and full enjoyment of a good provided by property might be subject to limits determined by law. According to section 976 CCQ, neighbours shall suffer the normal neighbourhood annoyances that are not beyond the limit of tolerance they owe each other, according to the nature or location of their land or local custom.

18 See Cantin Cumyn, note 8 above at 404. According to Section 1010 CCQ, co-ownership is ownership of the same property, jointly and at the same time, by several persons each of whom is privately vested with a share of the right of ownership; co-ownership is called undivided where the right of ownership is not accompanied with a physical division of the property.

19 Section 1030 CCQ.

20 However, partition may be prevented when the object of co-ownership is appropriated to a durable purpose. In *Rousseau v Lafrance*, Superior Court of Quebec, Judgement of 20 June 2006, J.E. 2007-401, partition of a well used for domestic alimentation is refused because the Court finds that the well serves for a durable purpose.

21 See Sections 1015 and following CCQ.

between groundwater and surface water makes it impossible to identify precisely undivided co-owners. Poorly defined property rights on groundwater induce spoliation of the resource, while transaction costs related to negotiations increase exponentially with the number of co-owners.²²

As a result, undivided co-ownership, construed as the embodiment of common property in Quebec civil law, cannot be used as a legal mechanism for the allocation of groundwater. No other type of private property ownership or other right resulting from the dismemberment of private property is relevant to groundwater quantity management.²³

1.3 Public Property

The Canadian Constitution generally provides that provinces own natural resources on their territories.²⁴

²² These conclusions derive from the findings of Garrett Hardin and Ronald Coase: see Garrett Hardin, 'The Tragedy of the Commons', 162 *Science* 1243 (1968), and Ronald Coase, 'The Problem of Social Cost', 3 *J. L. & Econ.* 1 (1960).

²³ Besides co-ownership, it must be noted that the right of use, which is a dismemberment of property, has also been studied with respect to water allocation: see Sections 1172 to 1176 CCQ and Commission d'étude des problèmes juridiques de l'eau, note 7 above at 75, 335. The right of use is relevant to a discussion on the common property of water in Quebec in as much as it would allow successive users to utilise indefinitely the same volumes of groundwater. Indeed, the right of use does not authorise its holder to affect the substance and quality of the object to which it is attached. In principle, the quality and quantity of water would therefore remain constant if the resource was subject to rights of use. However, given that the utilisation of water affects its physical characteristics and that the right to use only allows for the utilisation of the resource for domestic purposes, the right of use does not provide an appropriate legal framework for groundwater management. Moreover, the right of use implies that the resource is the property of a third party, whereas groundwater in a natural state is never subject to property rights: see Sub-section 1.4 below.

²⁴ With respect to the province of Quebec, property over natural resources stems from Sections 109 and 117 of the *Constitutional law of 1867*, U.K., 30 and 31 Victoria, c.3. See also Dale Gibson, 'The Constitutional Context of Canadian Water Planning', 7 *Alta. L. Rev.* 71, 72-73 (1969), Dominique Alh  rithi  re, *La gestion des eaux en droit constitutionnel canadien* 27-36 (Qu  bec:   diteur officiel du Qu  bec, 1976), and Fran  ois Chevette, 'Dominium et Imperium: l'  tat propri  taire et l'  tat puissance publique en droit constitutionnel canadien', in Benoit Moore ed., *M  langes Jean Pineau* 665, 672 (Montr  al:   ditions Th  mis, 2003).

Some of the Canadian provinces have legislated to explicit provincial ownership in water resources. For example, the Alberta Water Act vests the property in and the right to use all provincial waters in the provincial Crown.²⁵

Such is not the case in Quebec, where legislation expressly avoids vesting groundwater property in the provincial Crown.²⁶ Moreover, whereas the Minister of Natural Resources and Wildlife exercises all the rights and powers inherent in the right of ownership with respect to the lands that form part of the domain of the State, the Minister of Sustainable Development, Environment and Parks (hereafter MSDEP) is the agency having authority over the waters in the domain of the State.²⁷

Rather than vesting property over waters in the provincial Crown, the Quebec Water Policy indicates that the Quebec government intends to revise the legal status of groundwater and surface water in order to place water resources in a collective heritage.²⁸ The recent Bill 92, introduced as An Act to Affirm the Collective Nature of Water Resources and Provide for Increased Water Resource Protection (hereafter Bill 92), specifies that groundwater might become part of the common heritage of the Quebec nation.²⁹ Although the legal implications of such a characterisation are not entirely clear, it seems to imply a move further away from any sort of property ownership over water resources as well as an increasingly direct responsibility for the protection and management

²⁵ Sections 1 and 3, para.2 of the *Water Act*, R.S.A. 2000, c.W-3.

²⁶ According to Section 3 of the *Mining Act*, R.S.Q., c.M-13.1 [hereafter MA], mineral substances other than those of the tilth form part of the domain of the State. Section 1 MA specifies that 'mineral substances' means natural mineral substances in solid, gaseous or liquid form, except water.

²⁷ See Section 2 of the *Act Respecting the Lands in the Domain of the State*, R.S.Q., c.T-8.1, and Section 13 of the *Act Respecting the Minist  re du D  veloppement durable, de l'Environnement et des Parcs*, R.S.Q., c.M-30.001.

²⁸ Quebec Water Policy, note 8 above at 15-17, 83.

²⁹ Section 1 Bill 92.

of water accruing to the provincial state as a custodian and possibly a trustee.³⁰

The idea that the state might administrate water resources in trust suggests four potential ramifications: 1) the common heritage might be akin to a political trust that could not be enforced in the courts.³¹ This possibility appears highly unlikely, as Bill 92 would allow the Attorney General to institute actions for damage to water resources.³² 2) Aboriginal law might also be perceived as a source for the interpretation of legal implications linked to the characterisation of water as a common heritage because the State has judicially enforceable fiduciary duties with respect to natural resources held in trust for the aboriginal people.³³ 3) The American doctrine of public trust could be influential in determining the legal implications of the legal status of water resources as a common heritage. Although such a doctrine is not yet formally recognised in Canadian law, the Supreme Court of Canada has recently sent a signal in favour of its incorporation.³⁴

4) Finally, the operation of the social trust as provided for by the CCQ could be an inspiration.³⁵ Of note is the fact that a civil law trustee does not have real rights in the trust patrimony.³⁶

Given the above, public property fails to provide legal mechanisms for groundwater quantity management in Quebec.

1.4 Open Access

Although groundwater is subject to private property according to prevailing traditional case law and doctrine, the CCQ explicitly states that water resources, including groundwater, are *res communes*.³⁷ By definition, groundwater that has a public purpose or is intended to have a public purpose can never be subject to property rights, even once it has been pumped and bottled. In principle, the legal status of groundwater prevents the operation of property and its derivatives as a resources allocation system.³⁸ Currently, the characterisation of groundwater as a *res communis* has no other implication in administrative or positive

³⁰ See the preamble of Bill 92. This issue is not studied in Quebec doctrine. The notion of custody to which Bill 92 refers is most often linked in the CCQ to the legal framework regarding persons that do not fully exercise civil rights or to a presumption of civil liability for damages caused by the autonomous act of a thing. As a result, the characterisation of the State as custodian does not seem as potentially relevant to water resources management as the notion of common heritage might be. French doctrine indicates that recognition as a common heritage further restricts the role of property as a management mechanism applicable to water resources and might designate the State as a trustee: see Marie-José Del Rey, 'La notion controversée de patrimoine commun', 6 *Recueil Dalloz* 388 (2006), and Isabelle Savarit, 'Le patrimoine commun de la nation, déclaration de principe ou notion juridique à part entière?', 14 *Rev. fr. dr. admin.* 305 (1998).

³¹ See *Gerin v The Queen*, Supreme Court of Canada, Judgement of 1 November 1984, 1984/2 SRC 335, 350-352, 378-379.

³² Section 7 Bill 92.

³³ With respect to the fiduciary duty of the State in aboriginal law, see Kent McNeil, 'Fiduciary Obligations and Aboriginal People', in Mark Gillen and Faye Woodman eds, *The Law of Trusts: A Contextual Approach* 807, 813-826 (Toronto: Emond Montgomery Publications, 2000).

³⁴ *Colombie Britannique v Canadian Forest Products*, Supreme Court of Canada, Judgement of 11 June 2004, 2004/2 SRC 74, Para.81, and Jerry DeMarco, 'The Supreme Court of Canada's Recognition of Fundamental Environmental Value: What Could be Next in Canadian Environmental Law?', 17 *J. Env. L. & Practice* 159, 195-203 (2007).

³⁵ See Sections 1278, 1282, 1283, 1290, 1306, 1307, 1309, 1310, 1311, 1315 and 1317 CCQ.

³⁶ Section 1261 CCQ.

³⁷ Section 913 CCQ reads as follows: 'Certain things may not be appropriated; their use, common to all, is governed by general laws and, in certain respects, by this Code. However, water and air not intended for public utility may be appropriated if collected and placed in receptacles'. The *Environment Quality Act*, R.S.Q., c.Q-2 [hereafter EQA], which is one of the 'general laws' referred to in section 913 CCQ, defines water as 'surface water and underground water wherever located': see Section 1 para.1 EQA and Pierre Issalys and Denis Lemieux, *L'action gouvernementale: précis de droit des institutions administratives* 67-70 (Cowansville: Éditions Yvon Blais, 2nd ed. 2002) [hereafter Issalys].

³⁸ With respect to the fact that *res communes* cannot be subject to private or public property, see Lamontagne, note 7 above at 8 and 19, Normand, note 15 above at 62, and Marie-Alice Chardeaux, *Les choses communes* 62-103 (Paris: Librairie Générale de Droit et de Jurisprudence, 2006).

law.³⁹ It simply leaves a space open for the legislating authority to police the resource through statutory law.⁴⁰

However, a right to use groundwater is tied to real estate property.⁴¹ This right of usage is not included in the bundle of rights that constitute property ownership, but is in addition to those rights. If statutory law regarding the management of groundwater is ignored, this right allows for the usage of *ex ante* unspecified quantities of groundwater. Usable groundwater volumes may only be legally defined by judicial dispute before the courts.⁴² Hence, in the absence of nearby competing anthropogenic usages, the quantitative aspect of the right to use groundwater tied to real estate property remains undefined and landowners may use as much groundwater as desired. In addition, the adjudication of groundwater quantities through litigation is relative to the situation and needs of the users rather than based on the objective hydrological reality.

In light of the above, the influence of property on groundwater allocation is indirect. Apportionment of the resource is bivalent and initially conditional on real estate property ownership. Indeed,

landowners can refuse access to their property, thereby denying access to water sources located thereunder. Given that the right of usage granted by real estate ownership allows for the use of unspecified quantities of groundwater, access to the resource is almost open for real-estate owners according to the common law of property because it permits freedom of action where and when the negative effects of withdrawal cannot be evidenced in court by an injured third party. However, statutory law profoundly modifies this situation.

2 GROUNDWATER ALLOCATION THROUGH STATUTORY LAW

The right of usage tied to real estate property is modified by two governmental authorisation regimes. The first regime is provided for by the GWCR and generally targets all groundwater extraction projects in Quebec. The second authorisation regime, which is provided for by the Act respecting the preservation of agricultural land and agricultural activities (ARPALAA), is not primarily concerned with groundwater management and is only applicable in rural areas.⁴³

2.1 The GWCR as a Tool for Groundwater Quantity Management

The GWCR is primarily concerned with qualitative aspects of groundwater management. The only potential tools for groundwater allocation contained in the GWCR are two distinct authorisation regimes: ministerial authorisations that target projects with a withdrawal capacity above 75 m³ per day; municipal authorisations that target projects with a withdrawal capacity under 75 m³ per day.⁴⁴

First, the ministerial authorisation regime relies on a discretionary power governed by the following criteria: the MSDEP may deny an application to drill

³⁹ Management issues related to the impacts of the characterisation of water as a *res communis* only begin to draw attention in Quebec: see Madeleine Cantin Cumyn, 'Le regime juridique de l'eau, chose commune', in Catherine Choquette and Alain Létourneau eds, *Vers une gouvernance de l'eau au Québec* (Québec: Éditions Multimonde, 2008). French doctrine suggests that a *res communis* should be used in such a way so as not to prevent a similar utilisation by others: see Agathe Van Lang, *Droit de l'environnement* 149 (Paris: Presses universitaires de France, 2002). This seems inapplicable to water management, as the vast majority of usages degrade water. In the future, Section 3 of Bill 92 might imply that, as a *res communis*, water should be managed according to the principles of protection, restoration and improvement.

⁴⁰ Jean-Yves Cherot, 'Droit et environnement: introduction au séminaire', in Jean-Yves Cherot et al., *Droit et environnement: propos pluridisciplinaire sur un droit en construction* 7, 10 (Aix-en-Provence: Presses universitaires d'Aix-Marseille, 1995).

⁴¹ See Section 980 para.1 CCQ. Sections 980 and 981 CCQ do not imply property over the resource. They must be interpreted in conjunction with section 913 CCQ: Gil Rémillard, *Code civil du Québec: commentaires du ministre de la Justice et Loi sur l'application de la réforme du Code civil du Québec* 330 (Montréal: Publications DAFCO, 1993).

⁴² See Sections 976 and 982 CCQ. For judicial remedies, see Sub-section 3.2 below.

⁴³ R.S.Q., c.P-41.1.

⁴⁴ Sections 2 and 31 GWCR.

a high capacity well when it could cause prejudice to neighbours or unmitigated damages to water ecosystems, or when it could lower water tables or lead to the mining of excessive volumes given the resources available.⁴⁵ The criteria guiding the ministerial power are directly inspired from the American Restatement of Torts.⁴⁶ In addition, when deciding whether or not to authorise a high capacity project, the MSDEP must consider a hydrogeological study establishing the impact of the project on the environment, other users, public health and food safety.⁴⁷ The hydrogeological study, which is submitted to the MSDEP with the project application, contains detailed information with respect to each of the criteria guiding the ministerial decision.⁴⁸ Given the above, the ministerial authorisation is indeed the foundation for a groundwater allocation regime. This regime, which exempts groundwater extractions linked to mine dewatering, is prospective and aims at conflict prevention. However, it precludes the optimisation and rationalisation of groundwater exploitation as well as long term planning in resource management. This conclusion stems from the following considerations: 1) the authorisation regime favours stochastic resource development because it relies on the ad hoc assessment of individual withdrawal projects when applications are submitted; 2) the opportunity to authorise a withdrawal is subjectively assessed with respect to its potential impacts on other projects and the environment, although a more objective assessment would also rely on a pre-determined hydrological zoning method suggested during the inception of the GWCR;⁴⁹ 3) the

authorisation regime does not differentiate groundwater uses according to their purposes; 4) the authorisation regime is not retroactive and wells installed before the implementation of the GWCR in 2003 are granted acquired rights.⁵⁰

Second, the municipal authorisation regime does not vest discretionary power into the hands of the municipalities.⁵¹ Municipalities must authorise low capacity projects that comply with the technical specifications stipulated by the GWCR to protect groundwater quality. As a result, the authorisation regime for low capacity projects cannot be construed as a mechanism for groundwater allocation since municipalities may be compelled to authorise a new usage even if it causes prejudice to existing uses or leads to aquifer overdraft and damages ecosystems. The Legislator's decision to exclude low capacity projects from the GWCR quantity management regime is motivated by the following: 1) low capacity projects are believed to have no significant potential impacts on other users or the environment.⁵² Hence, the costs of establishing and maintaining a quantity management regime for low capacity projects dwarf the expected benefits, especially since small private wells are not inventoried and extremely numerous. 2) During the inception of the GWCR, groundwater was generally perceived as an object of private property.⁵³ Governmental officials believed that subjecting low capacity projects to rules aimed at controlling groundwater extraction might be challenged as a taking and an illegal expropriation unjustified by environmental concerns. 3) Low capacity projects mainly serve domestic purposes and

45 Sections 1 GWCR and 46 para. s) EQA, as well as Ministère du Développement durable, de l'Environnement et des Parcs, Guide d'interprétation du Règlement sur le captage des eaux souterraines, Commentaries relative to section 1 GWCR (Québec: Gouvernement du Québec, 2^{ième} version, mise à jour du 6 février 2006).

46 American Law Institute, *Restatement of the Law, Second, Torts* 258 (Saint-Paul: American Law Institute Publishers, 2nd ed. 1979).

47 Sections 33 to 37 GWCR.

48 Robert Chapuis, *Guide des essais de pompage et leurs interprétations* 101-102 (Sainte-Foy: Publications du Québec, 1999).

49 See Ministère de l'Environnement et de la Faune, Plan d'action pour la mise en œuvre de la Politique de protection et de conservation des eaux souterraines (Québec: Gouvernement du Québec, Projet, 1996).

50 Sections 31 and 65 para.2 RCES, and *Couture v Plante*, Superior Court of Quebec, Judgement of 5 May 2005, 2005 RDI 548.

51 See Issalys, note 37 above at 159-161, 182-194 and 530-531.

52 Commission sur la gestion de l'eau au Québec, *L'eau, ressource à protéger, à partager et à mettre en valeur* 21-22 Vol.1 (Québec: Bureau d'audiences publiques sur l'environnement, 2000).

53 Ministère de l'Environnement et de la Faune du Québec, Politique de protection et de conservation des eaux souterraines 7-8, 12-13, 32 (Québec: Gouvernement du Québec, Document de travail, 1997) [hereafter Ministère de l'Environnement 1997], and Ministère de l'Environnement et de la Faune du Québec, La problématique des eaux souterraines au Québec 44, 47-48, 53 (Québec: Gouvernement du Québec, Projet, 1996).

refusing an authorisation could deny a basic human right.⁵⁴

2.2 The Impact of the ARPALAA on Groundwater Allocation

The purpose of the ARPALAA is to preserve agriculture and agricultural land. Essentially, the ARPALAA is a zoning statute that generally prohibits any person, except with the authorisation of the Commission de protection du territoire agricole (CPTAQ), from using real estate property for any purpose other than agricultural activities in designated agricultural regions.⁵⁵ Although the application of this statutory regime is restricted to portions of the provincial territory, its impact on water resources allocation is important because water shortages have recently appeared in rural areas where groundwater is the primary source of water.⁵⁶

The ARPALAA's effect on groundwater allocation is twofold: 1) the ARPALAA favours two specific types of groundwater uses by subtracting them to the general prohibition. First, groundwater withdrawals for agricultural purposes are allowed.⁵⁷ Second, existing groundwater extractions for any purpose other than agriculture in place when the legislation was implemented have acquired rights and are excluded from the general prohibition.⁵⁸ 2) It is possible to circumvent the general prohibition to use real estate property to pump groundwater for a purpose other than agriculture by obtaining the CPTAQ's authorisation.⁵⁹ However, the application of the criteria guiding the CPTAQ decision imply that groundwater uses that may be authorised by the CPTAQ are mainly: a) the non-agricultural uses that have no significant negative impacts on agricultural activities (including groundwater extraction for agricultural purposes);⁶⁰

b) the groundwater uses that are justified by the public interest and have minimised impacts on agricultural activities.⁶¹

Given ARPALAA's effect on groundwater allocation, agricultural uses are prioritised over all other types of uses in rural areas. It must be noted that the administrative process at the CPTAQ further to application for an authorisation permits some degree of public participation whereby interested persons may submit observations and voice their opposition.⁶²

3

GROUNDWATER ALLOCATION THROUGH JUDICIAL MEANS

Despite the preventive nature of the statutory regime for resource allocation, conflicts resulting from groundwater utilisation might still materialise. In such cases, the operation of the legal framework is considered in a more traditional role as a formalised dispute resolution mechanism to diffuse and settle conflicts between diverging societal interests. To synthesise the numerous possibilities entailed by this approach and offer a coherent presentation of the recourses having a significant impact on groundwater allocation, this section details in turn: 1) proceedings to gain access to groundwater; 2) legal actions to deny or prevent groundwater utilisation.

3.1 Recourses to Gain Access to Groundwater

According to the scant scientific assessments available, most aquifers in Quebec are in predevelopment conditions. Nevertheless, the

54 See Ministère de l'Environnement 1997, note 53 above at 14.

55 See sections 1, 3, 26, 97 and 98 ARPALAA.

56 *Ville de Thetford Mines v Municipalité d'Irlande*, Superior Court of Quebec, Judgement of 26 January 2004, JE 2004-535, provides a well-known example of a 'water war' between two rural municipalities in Quebec.

57 See Sections 1, 12, 26, 55, 61.1, 62, 65.1, and 97 ARPALAA.

58 Sections 101 and 103 ARPALAA.

59 See Sections 1, 12, 26, 55, 61.1, 62, 65.1, and 97 ARPALAA.

60 See *St-Alexis-de-Montcalm (Municipalité du village de)*, Commission de protection du territoire agricole du Québec, Decision of 26 May 1992, RPTA 84 (1992).

61 See *Municipalité du Lac-Mégantic et Lapierre*, Commission de protection du territoire agricole du Québec, Decision of 6 April 2005, 334930.

62 See Sections 13, 58, 58.1, 58.2, 60, 60.1, 60.2, 61, 62.5 and 64 ARPALAA, as well as *La Nouvelle-Beauce (Municipalité régionale de comté de) et Bourret*, Commission de protection du territoire agricole du Québec, Decision of 1 September 1995, 1995 RPTA 176.

GWCR authorisation regimes are broad and encompass most significant withdrawal projects as well as projected capacity increases on wells existing prior to the implementation of the regimes. Thus, groundwater usages are generally illegal unless authorised by the competent authority. As a result, the only significant remedies to gain access to groundwater are administrative reviews or judicial reviews that target the Administration.

First, when the CPTAQ or the MSDEP refuse to authorise a withdrawal project, the unsuccessful applicant can initiate proceedings to review the administrative decision.⁶³ The review process is similar whether the decision to refuse the authorisation emanates from the CPTAQ or the MSDEP although, with respect to the former, the process is open to participation from interested parties in addition to the unsuccessful applicant.⁶⁴ The reviewed decision is not subject to appeal if it originally bears on a decision from the MSDEP, while it can be appealed once to the Quebec Court in the alternative.⁶⁵ If the review is successful, the project initially refused by the CPTAQ or the MSDEP is authorised and the applicant is granted legal access to groundwater.

Second, if the administrative review is unsuccessful, judicial review by the Superior Court might provide another option to obtain legal access to groundwater.⁶⁶ In general, administrative recourses must be exhausted before judicial review is initiated.⁶⁷ Judicial review is not a potent tool to authorise an application for withdrawal which was refused because the Superior Court is only competent to sanction an illegal decision from the reviewing authority.⁶⁸

Moreover, if the reviewed decision is deemed illegal, the Superior Court might not rule on merit and refer the file back to the reviewing authority.⁶⁹

3.2 Legal Actions to Deny or Prevent Groundwater Utilisation

Legal actions to deny or prevent groundwater utilisation generally target users. Such judicial means are more numerous than the recourses to gain access to groundwater. However, only four of those have a significant impact on the allocation of groundwater resources are considered hereafter.

First, the Environment Quality Act (hereafter EQA), which is the enabling legislation for the GWCR, provides that every person has a right to a healthy environment to the extent stipulated by the law.⁷⁰ To protect the right to a healthy environment, it is possible to file a prohibitive injunction against any act or operation that is illegal under the GWCR.⁷¹ Hence, the implementation of the regulatory regime for groundwater allocation is potentially reinforced by judicial recourses that can be filed by any natural person domiciled in Quebec and frequenting the vicinity of a place in respect of which a contravention is alleged.⁷² A person might prevent groundwater utilisation when a withdrawal is not authorised or when the authorised user does not comply with the conditions set forth by the MSDEP, among which the maximum rate of withdrawal. However, prohibitive injunctions cannot be filed against duly authorised activities that deplete groundwater resources such as dewatering operations for quarry exploitation.⁷³

Second, the CCQ provides that, unless it is contrary to the general interest, a person having a right to

⁶³ Sections 96 para.2 EQA and 21.1 ARPALAA.

⁶⁴ The *Act respecting administrative justice*, R.S.Q., c.J-3 [hereafter ARAJ], applies in both cases.

⁶⁵ Sections 14, 158 and 159 of ARAJ.

⁶⁶ Section 846, *Code of civil procedure*, R.S.Q., c.C-25 [hereafter CCP].

⁶⁷ Patrice Garant, *Droit administratif* 602-608 (Cowansville: Éditions Yvon Blais, 5th ed. 2004).

⁶⁸ Pierre Lemieux, *Droit administratif. Doctrine et jurisprudence* 2 (Sherbrooke: Éditions Revue de droit de l'Université Sherbrooke, 2nd ed. 1993), Gabrielle Perrault, *Le contrôle judiciaire des décisions de l'administration. De l'erreur juridictionnelle à la norme de contrôle* 28-31 (Montreal: Wilson & Lafleur, 2002), and Gilles Pépin & Yves Ouellette, *Principes de contentieux administratif* 457 (Cowansville: Éditions Yvon Blais, 2nd ed. 1982).

⁶⁹ *Panneaux Vicply inc. v Guindon*, Court of Appeal of Quebec, Judgement of 26 November 1997, JE 98-109, *Pelletier v Cour du Québec*, Court of Appeal of Quebec, Judgement of 10 September 2002, 2002 RJQ 2215, *Lapray Realities Ltd. v Montréal (Ville de)*, Court of Appeal of Quebec, Judgement of 4 May 2005, JE 2005-1073.

⁷⁰ Section 19.1 EQA.

⁷¹ Section 19.2 EQA and Robert Daigneault and Martin Paquet, *L'environnement au Québec*, ¶5 050, ¶50 600 (Farham: Publications CCH, mises-à-jour périodiques, 1994).

⁷² Section 19.3 EQA.

⁷³ Section 19.7 EQA.

use water may, to prevent the water from being depleted, require the destruction or modification of any works by which the water is or could be depleted.⁷⁴ This recourse is only available to owners of proprietary rights in real estate against other such neighbouring owners.⁷⁵ It might be used preventively, before actual damages are incurred.⁷⁶ However, it is subject to limitations similar to those applicable to injunctive proceedings based on the right to a healthy environment because duly authorised activities depleting groundwater resources are deemed to conform to the general interest.⁷⁷

Third, a groundwater withdrawal might be suppressed as it becomes illegal further to the quashing of an authorisation granted under the GWCR by a Court's ruling on judicial review. This recourse is useful when the decision to authorise a withdrawal is illegal. With respect to low capacity wells, municipal authorisations can be quashed when wells do not comply with the technical specifications provided by the GWCR.⁷⁸ With respect to high capacity wells, the characterisation of ministerial decisions to authorise withdrawals is more difficult because the ministerial power granted by the GWCR is discretionary. Case law has not determined the standard to be applied in assessing the legality of ministerial decisions under the GWCR. However, the relevant jurisprudential principles indicate that ministerial authorisations can be quashed when unreasonable.⁷⁹ As a result, an authorisation to use groundwater may be quashed when it is unreasonable to believe that

the withdrawal would not cause prejudice to neighbours or unmitigated damages to water ecosystems, or that the withdrawal would not lower water tables or lead to the mining of excessive volumes given the resources available.⁸⁰

Fourth, civil liability is another potential recourse against groundwater users. To succeed, a plaintiff must prove a prejudice resulting from wrongful groundwater usage.⁸¹ However, the considerable complexity and inherent time-lag on many aquifer flow regimes mean that cause and effect often tend to become decoupled.⁸² Hence, actions in civil liability tend to have low likelihoods of success because it is difficult to evidence causation. Nevertheless, such recourses remain interesting for the following reasons: 1) contrary to expectations, case law indicate that causation might be relatively easy to prove through factual presumptions;⁸³ 2) recent developments in case law indicate that courts are more receptive to civil actions against the Crown;⁸⁴ 3) the ministerial authorisation regime relies heavily on the hydrogeological studies filed by applicants for groundwater withdrawal, and civil liability is the only recourse available to hold legally responsible the professional that produce the hydrogeological studies.

4

ASSESSMENT OF THE LEGAL FRAMEWORK FOR GROUNDWATER ALLOCATION

The previous three sections provide a model of the legal framework pertaining to groundwater quantity

74 Section 982 CCQ.

75 *Ciment du Saint-Laurent v Barrette*, Court of Appeal of Quebec, Judgment of 31 October 2006, 2006 RJQ 2633. This case is on appeal to the Supreme Court of Canada and currently under advisement.

76 Anne-Marie Sheahan, 'Le Nouveau Code civil du Québec et l'environnement', in Barreau du Québec, *Développements récents en droit de l'environnement* (1994) 1, 13 (Cowansville: Éditions Yvon Blais, 1994).

77 With respect to the notion of general interest in the context of section 982 CCQ, see *Ouimette v Canada (Procureur général)*, Superior Court of Quebec, Judgment of 24 April 1995, 1995 RJQ 1431, *Association des résidents du lac Mercier inc. v Paradis*, Superior Court of Quebec, Judgment of 27 August 1996, 1996 RJQ 2370, and *Roy v Tring-Jonction (Corp. municipale du village de)*, Superior Court of Quebec, Judgment of 6 November 2000, JE 2001-769.

78 See Sections 4 to 23 GWCR.

79 *Dunsmuir v New Brunswick*, Supreme Court of Canada, Judgment of 7 March 2008, 2008 SCC 9.

80 See Section 1 GWCR and Sub-section 2.1 above.

81 Sections 1376 and 1457, CCQ.

82 Stephen Foster, 'Essential Concepts for Groundwater Regulators', in Salman Salman ed., *Groundwater: Legal and Policy Perspectives* 15, 19 (Washington: World Bank, 1999).

83 See *Dufour v Grégoire*, note 7 above.

84 Christine Duchaine, 'Les recours visant le respect des lois environnementales à la portée des citoyens: l'émergence d'une autorité de contrôle sociétal', in Barreau du Québec, *Développements récents en droits de l'environnement* (2007) 223, 271-272 (Cowansville: Éditions Yvon Blais, 2007).

management as well as a detailed description of its impacts on resource allocation through exegetical analysis. Yet, water law performs a reforming function with respect to society and environment. It should not be interpreted in isolation but must be studied in relation to its effects. Therefore, the efficiency of water law and the corollary question of water law's improvement are fundamental issues.

However, national or provincial water law addresses highly technical questions. Cost and benefit analysis of the different regulatory options as well as scientific assessments of the technical possibilities with respect to groundwater management extend far beyond the traditional realm of legal studies. Such approaches depend on data and methods from the fields of hydrogeology, chemistry, biology and economy, among others.⁸⁵ To be coherent and useful, a normative evaluation of the legal framework regarding groundwater allocation must integrate these domains.

In this context, the Integrated Water Resources Management (hereafter IWRM) paradigm offers a useful comparative model. IWRM can be defined as the management of surface and subsurface water in qualitative, quantitative and ecological sense from a multi disciplinary perspective and focussed on the needs and requirements of the society at large regarding water.⁸⁶ As a result, a jurist gains the ability to make a normative assessment of the legal framework for groundwater quantity management by relying on conclusions from other disciplines which are integrated into the IWRM model. Discrepancies between the prescriptions of the IWRM paradigm and the characteristics of the legal framework for groundwater quantity management are identified as potential defects of the framework to which improvements can be suggested.

IWRM is also particularly interesting as a model to assess the legal framework for groundwater allocation

because the Quebec Government is committed to the implementation of the concept of sustainable development in water management.⁸⁷ IWRM can be regarded as the vehicle that makes the general concept of sustainable development operational for the management of freshwater resources.⁸⁸ Indeed, sustainable development is more apt to be successful when groundwater development occurs within the context of IWRM⁸⁹. Water management in Quebec has already moved towards increasing conformity to IWRM in recent years and should continue to do so in the future. Thus, the IWRM model can be used to further improve the legal framework for groundwater allocation.

4.1 The Protection of Environmental Flows

Groundwater and surface water are inextricably connected and form a single resource. In Quebec, where water tables are shallow, the interaction between underground and surface waters is direct and dynamic. In general, groundwater resources seep into surface waters and contribute to minimum flows in rivers and lakes. Hence, groundwater over-exploitation may reduce the amount of water available for aquatic ecosystems, agriculture, industries, and downstream communities. The absence of environmental flows damages ecosystems and puts at risk the communities depending on them.⁹⁰

The protection of environmental flows forms part of an ecosystem approach to IWRM.⁹¹ To preserve

85 For example, see Cadmus Group, *Regulatory Impact Analysis for the Proposed Ground Water Rule* (Arlington: Cadmus Group, 2000), available at: www.epa.gov/safewater/disinfection/gwr/pdfs/impactanalysis_gwr_proposed.pdf.

86 Paul Van Hofwegen and Frank Jaspers, *Analytical Framework for Integrated Water Resources Management: Guidelines for Assessment of Institutional Frameworks 7* (Rotterdam: Balkema, 1999).

87 See Pierre Baril, Yvon Maranda and Julien Baudrand, 'Integrated Watershed Management in Québec (Canada): a Participatory Approach Centered on Local Solidarity', 53 *Water Science & Technology* 301 (2006), and Pierre Auger and Julien Baudrand, *Gestion intégrée de l'eau par bassin versant au Québec. Cadre de référence pour les organismes de bassins versants prioritaires* (Québec: Ministère de l'Environnement, 2004).

88 Antoinette Hilderling, *International Law, Sustainable Development and Water Management* 32 (Delft: Eburon Academic Publishers, 2004).

89 Emilio Custodio, Vicki Kretsinger and Ramòn Llamas, 'Intensive Development of Groundwater: Concepts, Facts and Suggestions', 7 *Water Policy* 151 (2005).

90 Megan Dyson, Ger Bergkamp and John Scanlon eds, *Flow. The Essentials of Environmental Flows* (Gland: IUCN, 2003).

91 Brisbane Declaration, Tenth International River Symposium and International Environmental Flows Conference, held in Brisbane, Australia, on 3-6 September 2007.

environmental flows, groundwater exploitation must be limited to a sustainable yield that takes into account the finite volume of freshwater available at any one point in time. Although the criteria guiding the ministerial power to authorise new withdrawals in conformity with the GWCR could be interpreted liberally to prevent over-exploitation, the legal framework for groundwater quantity management fails to provide an explicit protection for environmental flows.

In this respect, Swiss water law sets an example for the improvement of the provincial framework. Specific provisions of the Federal Law on the Protection of Waters (hereafter FLPW) aim at maintaining appropriate residual rates of flow through a permit system for water withdrawals.⁹² A groundwater withdrawal that substantially affects the rate of flow of a watercourse may be permitted when the minimum residual watercourse flow is not reduced under a certain quantitative level. This system requires detailed technical knowledge and a sound scientific model of the hydrological regime. In Quebec, the implementation of similar provisions would imply significant financial investments. This issue might be solved by the application of the user-pays principle.⁹³

4.2 The Prioritisation of Groundwater Usages

The continuous increase in competing anthropogenic uses inevitably foments conflicts for resource appropriation given the limited volume of groundwater available at a specific moment. According to the IWRM paradigm, the legal framework for water quantity management must prioritise various types of usages to serve as a conflict resolution mechanism.⁹⁴ Water supply for basic human needs and ecosystem functions must be granted first priority. Then, uses for industry, agriculture, and other societal needs must be prioritised according to socioeconomic criteria

through cost-recovery mechanisms and economic pricing.⁹⁵

In Quebec, the legal framework for groundwater quantity management in case of effective conflict is globally neutral in as much as groundwater withdrawals are not explicitly prioritised according to types of usages. However, the ARPALAA implicitly prioritise agricultural uses over all other uses in rural areas. In addition, it can be argued that the legal framework for groundwater allocation generally prioritise anthropogenic uses over environmental uses.

Governmental guidelines have already suggested the implementation of an explicit hierarchy between groundwater uses.⁹⁶ The establishment of a hierarchy of uses is an indigenous process highly dependent on contextual factors. The order of priority between types of uses must be carefully calibrated to correspond to Quebec's environmental and socioeconomic reality. Nevertheless, examples from foreign jurisdictions might be helpful. In France, the Code de l'environnement (hereafter CE) prioritises basic human needs and public health.⁹⁷ In conformity with the principle of subsidiarity, the legal framework is decentralised to a certain degree and open to input from competing users to define priorities at the water catchment level.⁹⁸

4.3 The Extension of the Allocation Regime

IWRM requires that the scope of the framework for groundwater quantity management be as broad as possible. The zero-sum interactions between groundwater users and the connexions between aquifers and surface waters weaken the effectiveness of an allocation regime that excludes significant uses. This is a classic problem for Common-Pool Resource

92 Sections 29 to 36, Switzerland: Federal Law on the Protection of Waters, 24 January 1991, RS 814.20.

93 See Section 3a FLPW. Section 4 Bill 92 would be a step towards the implementation of the user-pays principle with respect to water resources management in Quebec.

94 See Hofwegen and Jaspers, note 86 above at 10, 15-16.

95 Karin Kemper, 'Rethinking Groundwater Management', in Caroline Figuères, Johan Rockström and Cecilia Tortajada eds, *Rethinking Water Management: Innovative Approaches to Contemporary Issues* 120, 134 (London: Earthscan Publications, 2003).

96 See Ministère de l'Environnement 1996, note 53 above at 15, and also Section 17 – 31.76 Bill 92.

97 Section L210-1, as modified by Statute n°2006-1772 of 30 December 2006 - Art. 1 JORF.

98 Sections L211-1 and L212-5-1 §II (1°) CE.

theory, which states that ‘without a clear definition of who the users are and how much water they are entitled to, the users themselves have no incentive to use the water efficiently because they have no guarantee that if they save water today, the aquifer’s yield will permit them to abstract what they need tomorrow’.⁹⁹ Given the difficulty in defining aquifer boundaries, a robust legal framework for ground water allocation must be as general and comprehensive as possible.

The GWCR groundwater allocation regime is broad. However, it excludes low capacity withdrawals, mine dewatering, and withdrawal operations that started before the implementation of the GWCR. The inclusion of withdrawals with vested rights and low capacity projects is not presently recommendable given that water resources are abundant in Quebec, that groundwater resources seem to be in predevelopment conditions, and that the impacts of low capacity withdrawals on other users and the environment seem insignificant. However, groundwater pumping for mine dewatering should be included in the GWCR regime given the following: 1) it is the most important groundwater use in terms of volume; 2) it has a negative impact on municipal water supply and causes tensions in northern mining regions; 3) the exclusion of mine dewatering results from a ministerial interpretation of the GWCR which could be challenged through a declaratory motion.

4.4 Public Participation to Groundwater Quantity Management

According to IWRM, water resources management regimes must be open to public participation. Effective participation implies that ‘stakeholders at all levels of the social structure have an impact on decisions at different levels of water

management’.¹⁰⁰ This is especially important with respect to groundwater management given the existence of a knowledge gap at the scientific level in Quebec. The imposition of a thoroughly deterministic management framework based on purely scientific and technical assessments of the hydrological reality would ignore the inherent margins of uncertainty in hydrological models. Within these margins, a space for public participation must be opened.

The ideal management unit for public participation is the catchment basin, whether for surface or underground water resources: ‘The decisions on IWRM must be participatory, technically and scientifically informed, and taken at the lowest appropriate level, but within a framework at the catchment, basin and aquifer levels which are the natural units by which nature manages water’.¹⁰¹

In Quebec, the legal framework for groundwater management is not open to public participation. Although the authorisation process under the ARPALAA provides minimal opportunities for stakeholder meetings and consultations, the GWCR allocation regime only involves the applicant to a ministerial authorisation and the MSDEP. Stakeholders that could potentially sustain negative impacts from new withdrawals are not included in the decision making process. Moreover, both the GWCR and the ARPALAA regimes are centralised and do not take into account basin boundaries. Although the Quebec government has been a vocal proponent of watershed management since 2002, this approach has yet to materialise in Quebec law.¹⁰² Again, French law provides an example for potential

⁹⁹ See Kemper, note 95 above at 135, Edella Schlager, ‘Common-Pool Resource Theory’, in Robert Durant, Daniel Fiorino and Rosemary O’Leary eds, *Environmental Governance Reconsidered: Challenges, Choices and Opportunities* 145, 151-155 (Cambridge: MIT Press, 2004), and Dinseh Kumar, ‘Identifying Management Strategies of Common Pool Regimes: Groundwater Resources’, in Manas Chatterji, Saul Arlosoroff and Gauri Guha eds, *Conflict Management of Water Resources* 290 (Burlington: Ashgate Publishing, 2002).

¹⁰⁰ Global Water Partnership Technical Advisory Committee, *Integrated Water Resources Management* 16 (Stockholm: Global Water Partnership, 2000).

¹⁰¹ M.L. Kansal, *System Analysis Techniques in Water Resources Management* 14 (Istanbul: Turkish Water Foundation, 2005).

¹⁰² Until now, only one catchment contract in Quebec might be construed as having some form of legally binding effect: see Catherine Choquette and Benoît Côté, ‘Réflexion sur la nature normative des contrats de bassin au Québec’, 47 *Cahiers de Droit* 755, 764-767 (2006). Sections 11 to 13 of Bill 92 would be the first statutory manifestations of water resources management in provincial law on the basis of catchment units.

reforms because it creates decentralised structures involving stakeholders representatives for different social groups in the decision making process at the watershed and sub-watershed levels.¹⁰³

CONCLUSION

In Quebec, groundwater is a *res communis*. The right to use groundwater is tied to real estate property. This right forms the basis of the legal framework for the management of groundwater quantity. However, according to statutory law, the actual use of groundwater is also dependent on governmental authorisations that limit quantities used. The main statutory instrument for managing the resource is the GWCR, which relies on ad hoc scientific assessments to determine the impacts of extraction projects. The aim of the GWCR is to prevent potential conflicts between first users and new users by means of governmental authorisations. In agricultural areas, an additional authorisation regime indirectly prioritises agricultural groundwater uses. Finally, legal mechanisms addressing conflicts between water users rely on the general litigation framework provided by Quebec law without establishing an order of priority for the different uses of the resource.

The likelihood of water shortage is expected to increase in Quebec during the next decades.¹⁰⁴ The legal framework for groundwater allocation should be as robust as possible to minimise and diffuse social conflicts resulting from possible water shortages. In this context, the IWRM paradigm indicates how to

reinforce the groundwater quantity management regime. According to the policy of IWRM, four aspects of the legal framework for groundwater quantity management can be modified to increase efficiency: 1) provisions should be made to preserve a residual environmental flow; 2) an order of priority should be established between different uses to minimise conflict; 3) the scope of the regime should be extended to all groundwater users to increase its efficiency; 4) groundwater users should participate in the management of the resource.

¹⁰³ Sections L212-1 to L212-5-1 and L213-8 as well as L213-8-1 CE.

¹⁰⁴ See C.B. Field et al., 'North America', in M.L. Parry et al. eds, *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* 622 (Cambridge: Cambridge University Press, 2007), Ministère du Développement Durable, de l'Environnement et des Parcs, *Québec et les changements climatiques, un défi pour l'avenir* 34 (Québec: Gouvernement du Québec, 2006), Claude Desjarlais et al. eds, *S'adapter aux changements climatiques* 38-45 (Montréal: Consortium Ouranos, 2004), and Mélissa Giguère and Pierre Gosselin, *Eau et santé: examen des initiatives actuelles d'adaptation aux changements climatiques au Québec* (Québec: INSPQ, 2006).

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